CLAIMS

1. An isolated polynucleotide comprising a sequence selected from the group consisting of:

(a) a sequence provided in SEQ ID NO:1931, 1938, 1941, 1974-2002, and 2003;

(b) complement of the sequence provided in SEQ ID NO:1931, 1938, 1941, 1974-2002, and 2003;

(c) sequences consisting of at least 20 contiguous residues of a sequence provided in SEQ ID NO:1931, 1938, 1941, 1974-2002, and 2003;

(d) sequences that hybridize to a sequence provided in SEQ ID NO:1931, 1938, 1941, 1974-2002, and 2003, under highly stringent conditions;

(e) sequences having at least 75% identity to a sequence of SEQ ID NO:1931, 1938, 1941, 1974-2002, and 2003;

(f) sequences having at least 90% identity to a sequence of SEQ ID NO:1931, 1938, 1941, 1974-2002, and 2003; and

(g) degenerate variants of a sequence provided in SEQ ID NO:1931, 1938, 1941, 1974-2002, and 2003.

2. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of:

(a) SEQ ID NO:1927-1930, 1932, 1934, 1937, 1940, 1942-1973, and 2004;

(b) sequences having at least 70% identity to the amino acid sequence as provided in SEQ ID NO:1927-1930, 1932, 1934, 1937, 1940, 1942-1973, and 2004;

(c) sequences having at least 90% identity to the amino acid sequence as provided in SEQ ID NO:1927-1930, 1932, 1934, 1937, 1940, 1942-1973, and 2004;

(d) sequences encoded by a polynucleotide of claim 1;

(e) sequences having at least 70% identity to a sequence encoded by a polynucleotide of claim 1; and

(f) sequences having at least 90% identity to a sequence encoded by a polynucleotide of claim 1.

3. An expression vector comprising a polynucleotide of claim 1 or a polynucleotide which encodes a polypeptide of claim 2 operably linked to an expression control sequence.

4. A host cell transformed or transfected with an expression vector according to claim 3.

5. An isolated antibody, or antigen-binding fragment thereof, that specifically binds to a polypeptide selected from the group consisting:

(a) a polypeptide according to claim 2; and

(b) a polypeptide having an amino acid sequence that is encoded by a polynucleotide sequence provided in SEQ ID NO:1948-1951, 1959, 1962-1968 and 1971 or a complement thereof.

6. An isolated antibody or antigent-binding fragment thereof according to claim 5, wherein the polypeptide is provided in SEQ ID NO:1927-1929 and 1942-1973.

7. A method for detecting the presence of a cancer in a patient, comprising the steps of:

(a) obtaining a biological sample from the patient;

(b) contacting the biological sample with a binding agent that binds to a polypeptide selected from the group consisting of:

(i) a polypeptide of claim 2,

(ii) a polypeptide having an amino acid sequence provided in SEQ ID NO:1934,

(iii) a polypeptide having at least 90% identity to an amino acid sequence provided in SEQ ID NO:1934,

(iv) a polypeptide having at least 95% identity to an amino acid sequence provided in SEQ ID NO:1934,

(v) a polypeptide encoded by a polynucleotide provided in SEQ ID NO:1933, and

(vi) a polypeptide encoded by a polynucleotide having at least 90% identity to a sequence provided in SEQ ID NO:1933;

(c) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(d) comparing the amount of polypeptide to a predetermined cut-off value and therefrom determining the presence of a cancer in the patient.

8. A fusion protein comprising at least one polypeptide selected from the group consisting of:

(i) a polypeptide of claim 2,

(ii) a polypeptide having an amino acid sequence provided in SEQ ID NO:1934,

(iii) a polypeptide having at least 90% identity to an amino acid sequence provided in SEQ ID NO:1934,

(iv) a polypeptide having at least 95% identity to an amino acid sequence provided in SEQ ID NO:1934,

(v) a polypeptide encoded by a polynucleotide provided in SEQ ID NO:1933, and

(vi) a polypeptide encoded by a polynucleotide having at least 90% identity to a sequence provided in SEQ ID NO:1933.

9. A fusion protein according to claim 8, wherein the at least one polypeptide is provided in:

(a) SEQ ID NO:1937 and 1940; and

(b) a polypeptide encoded by a polynucleotide provided in SEQ ID NO:1938 and 1941.

10. An oligonucleotide that hybridizes to at least one sequence selected from the group consisting of:

(a) a sequence set forth in claim 1; and

(b) a sequence provided in SEQ ID NO:1933,

under highly stringent conditions.

11. A method for stimulating and/or expanding T cells specific for a tumor protein, comprising contacting T cells with at least one component selected from the group consisting of:

(a) polypeptides according to claim 2;

(b) a polypeptide having an amino acid sequence provided in SEQ ID NO:1934;

(c) a polypeptide having an amino acid sequence at least 90% identity to SEQ ID NO:1934;

(d) a polypeptide having an amino acid sequence at least 95% identity to SEQ ID NO:1934;

(e) a polynucleotide according to claim 1;

(f) a polynucleotide which encodes a polypeptide having an amino acid sequence as provided in (b), (c) or (d);

(g) a polynucleotide having a sequence provided in SEQ ID NO:1933;

(h) complement of the sequence provided in SEQ ID NO:1933;

(i) sequences that hybridize to a sequence provided in SEQ ID NO:1933, under highly stringent conditions;

(j) sequences having at least 90% identity to a sequence of SEQ ID NO:1933;

(k) sequences having at least 95% identity to a sequence of SEQ ID NO:1933;

(l) degenerate variants of a sequence provided in SEQ ID NO:1933; and

(m) antigen-presenting cells that express a polypeptide according to (a), (b), (c) or (d),

under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.

12. An isolated T cell population, comprising T cells prepared according to the method of claim 11.

13. A composition comprising a first component selected from the group consisting of physiologically acceptable carriers and immunostimulants, and a second component selected from the group consisting of:

(a) polypeptides according to claim 2;

(b) a polypeptide having an amino acid sequence provided in SEQ ID NO:1934;

(c) a polypeptide having an amino acid sequence with at least 90% identity to SEQ ID NO:1934;

(d) a polypeptide having an amino acid sequence with at least 95% identity to SEQ ID NO:1934;

(e) a polynucleotide according to claim 1;

(f) a polynucleotide which encodes a polypeptide having an amino acid sequence as provided in (b), (c) or (d);

(g) a polynucleotide having a sequence provided in SEQ ID NO:1933;

(h) complement of the sequence provided in SEQ ID NO:1933;

(i) sequences that hybridize to a sequence provided in SEQ ID NO:1933, under highly stringent conditions;

(j) sequences having at least 90% identity to a sequence of SEQ ID NO:1933;

(k) sequences having at least 95% identity to a sequence of SEQ ID NO:1933;

(l) degenerate variants of a sequence provided in SEQ ID NO:1933;

(m) antibodies according to claim 5;

(n) fusion proteins according to claim 8;

(o) T cell populations according to claim 12; and

(p) antigen presenting cells that express a polypeptide according to (a), (b), (c) or (d).

14. A method for stimulating an immune response in a patient, comprising administering to the patient a composition of claim 13.

15. A method for the treatment of a lung cancer in a patient, comprising administering to the patient a composition of claim 13.

16. A method for determining the presence of a cancer in a patient, comprising the steps of:

(a) obtaining a biological sample from the patient;

(b) contacting the biological sample with an oligonucleotide according to claim 10;

(c) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

(d) compare the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the presence of the cancer in the patient.

17. A diagnostic kit comprising at least one oligonucleotide according to claim 10.

18. A diagnostic kit comprising at least one antibody according to claim 5 and a detection reagent, wherein the detection reagent comprises a reporter group.

19. A method for inhibiting the development of a lung cancer in a patient, comprising the steps of:

(a) incubating CD4+ and/or CD8+ T cells isolated from a patient with at least one component selected from the group consisting of:

(i) polypeptides according to claim 2;

(ii) a polypeptide having an amino acid sequence provided in SEQ ID NO:1934,

(iii) a polypeptide having an amino acid sequence with at least 90% identity to SEQ ID NO:1934,

(iv) a polypeptide having an amino acid sequence with at least 95% identity to SEQ ID NO:1934,

(v) polynucleotides according to claim 1,

(vi) a polynucleotide which encodes a polypeptide having an amino acid sequence as provided in (i), (ii), (iii) or (iv),

(vii) a polynucleotide having a sequence provided in SEQ ID NO:1933,

(viii) complement of the sequence provided in SEQ ID NO:1933,

(ix) sequences that hybridize to a sequence provided in SEQ ID NO:1933, under highly stringent conditions,

(x) sequences having at least 90% identity to a sequence of SEQ ID NO:1933,

(xi) sequences having at least 95% identity to a sequence of SEQ ID NO:1933,

(xii) degenerate variants of a sequence provided in SEQ ID NO:1933, and

(xiii) antigen presenting cells that express a polypeptide according to (i), (ii), (iii) or (iv),

such that T cells proliferate;

(b) administering to the patient an effective amount of the proliferated T cells; and thereby inhibiting the development of a cancer in the patient.